Sacramento Shows How to Take on Climate Change

A community-owned power company in Sacramento, California, is not waiting on the government or businesses to take action against global warming.

Harvesting the Sun

In 1993, SMUD, The Sacramento Municipal Utility District, borrowed 500 roofs and made them into miniature power plants that generate electricity by installing solar photovoltaic panels on them.

Photo SMUD

Solar panels on the roof of the Wilton Bible Church that were installed by SMUD in its PV Pioneer 1 program

This PV Pioneer I program helped SMUD learn how to install, operate, price and maintain solar photovoltaic electricity, helped jumpstart local businesses qualified to sell, install and maintain solar panels and made the price of the panels drop.

Now that the program is over, those who participated have the option to purchase the panels at a low cost.

In 1997, SMUD began a Community Solar Program where at one time, as many as 600 customers were voluntarily paying between $5-$25 extra on their electricity bill each month -- one cent per kilowatt hour above their current rate -- to put solar panels on the roofs of community buildings such as churches, schools, the gift shop at a zoo, a nature center, a family development center and the Society for the Prevention of Cruelty to Animals and other places.

Power to the People

SMUD is not only nonprofit, it is democratic. Ratepayers elect the seven-person board of directors.

Because of this and because profits go back into the system instead of to stockholders, the company was able to install five times as much solar power and twice as much wind power as PG&E, a neighboring for-profit power company.

SMUD has also been able to provide electricity at much lower costs than PG&E. In 2004, a SMUD customer would pay $61 for 700 kilowatt-hours of electricity, while a PG&E customer would pay $106.00 -- $45.00 more, according to the Coalition for Local Power in Davis, Calif.

Cutting the Costs of Solar

Then in 1999, SMUD found a way to cut the cost of solar panels in half. The company purchased solar panels in bulk from the Kyocera Company in Japan, which means it got deep discounts, then sold the panels to customers without

charging a profit. A 2 kilowatt array that would have costed $9,000 only costed SMUD customers $4,800. (The cost of solar energy has so increased that a 2 kilowatt array now costs approximately $18,000 in the United States.) Hundreds of customers participated.

Another project of SMUD was to build a solar shade structure at the Sacramento Airport--a roof over part of the parking lot covered with solar panels that keeps the cars cool, provides electricity for 52 home and provides electricity for four charging stations for electric vehicles.

Photo www.smud.org

Smud's solar-powered shade structure at the California State Exposition Fairgrounds keeps cars cool while generating electricity for the grid.

SMUD also built a solar shade structure over the parking lot at the California State Exposition Fairgrounds and put solar panels on the roofs of the California EPA, a SMUD training center, a state tax board building, a state office building, the SMUD customer service center, a TV station, a shopping mall, an aquatic center and on 26 horse barns at Cal Expo that provide power for the fairgrounds.

SMUD also built a 20-acre PV Power Plant near a nuclear power plant that the company shut down when voters indicated in an advisory referendum that they did not want nuclear energy. The site produces enough electricity to power 660 homes.

Photo Smud

Smud has contacted with builders in Sacramento to install solar panels on 3,000 new homes like these at Premier Gardens

California Speeds Up Progress

The California Senate passed a bill that will significantly increase the amount of solar generated electricity that power plants produce. "We have to build as much photovoltaic every year as we did in the last 20 years," said Jim Burke, Senior Product Services Coordinator, at SMUD. "It has increased our commitment to solar tenfold."

Photo Smud

Smud has 31 wind turbines in operation and another 21 under construction.

To do this, the company is now working with builders to install solar arrays on 3,000 new homes.

Furthermore, SMUD will assist any customer that wishes to obtain solar panels by paying for the system and allowing the customer to pay the company back in monthly installments. SMUD also provides rebates on the cost of solar arrays and holds solar energy workshops for homeowners to discuss photovoltaic technologies.

Other Sources of Electricity

There are no coal burning power plants in California. In addition to its solar power, SMUD also generates electricity for the grid from a windfarm, methane collected off a landfill (Many municipalities in the United States now collect methane off landfills, but flare it instead of using it to generate electricity), cogeneration plants, natural gas, steam turbines and biomass.

Understanding Different Types of Energy

Biomass electricity is produced from the residues generated from logging, mill operations and the manufacture of wood, pulp, paper, and fiberboard, agricultural field and orchard crops, livestock and poultry growing operations, food processing, and demolition (urban wood waste). The fuel is burned in a boiler to create steam that turns a turbine to generate electricity.

Geothermal electricity is produced using heat deep in the earth, (often evidenced by the presence of hot springs or geysers.) The heat creates steam that turns a turbine to generate electricity.

Hydroelectric power plants produce power as falling water turns turbines that generate electricity.

Cogeneration plants burn natural gas to make steam that turns turbines to make electricity, then industrial systems reuse the steam for heat.

Building an Urban Forest

A former energy advisor to President Carter, who also served as general manager of SMUD, S. David Freeman, made an amazing discovery when he bought a house in Sacramento. "Even though it was real hot that summer, we almost never needed air conditioning," he said. The trees in his yard were cooling his home. SMUD says when fully grown, properly placed trees can cut home cooling costs by as much as 40 percent, as well as provide many other benefits. Thus, the company began collaborating with the Sacramento Tree Foundation to plant 5 ft. tall shade trees, free of charge, in the yards of customers. Since 1990, they have planted 400,000 shade trees in the Sacramento area.

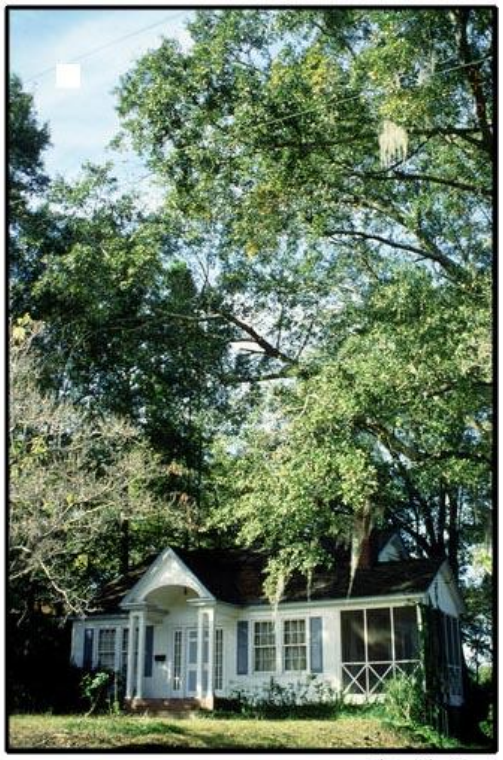

Photo John Krigger

Properly placed shade trees can reduce home heating costs by 40 percent.

The Cool Roof Program

SMUD is also working to reduce energy consumption by paying an incentive to homeowners to install a cool roof made of red clay tile that helps them save on average 20 percent on their future air conditioning costs.

In the 1990s, SMUD reduced energy consumption by paying customers $275 to purchase a new refridgerator that uses 75 percent less power.

About 30,000 SMUD customers have chosen to participate in a Greenergy program where they either pay $6 extra on their monthly bills to get all of their electricity from renewable sources or a charge of $3 extra to get half of their electricity from renewable sources. None of the dollars from the Greenergy Program will go for natural gas, which supplies 60 percent of the power company's electricity.

SMUD shows how we can fight climate change on a local level.